

# Claims

1. A process for copolymerizing polar and non-polar monomers, characterized in that at least one polar and at least one non-polar monomer are polymerized in the presence of one or more transition metal compounds from groups 5-10 of the Periodic System according to IUPAC 1985, one or more radical-producers and optionally one or more co-catalysts.
2. A process according to Claim 1, characterized in that the transition metal compound is chosen so that the transition metal compound, optionally in the presence of a co-catalyst, reversibly forms a complex with the radically growing polymer chain and non-polar monomers are inserted into the bond thus formed between transition metal and polymer chain.
3. A process according to one or more of Claims 1 to 2, characterized in that the radical-producer is chosen so that the radical-producer(s) initiate polymerization and do not react in a detrimental fashion with the transition metal compound.
4. A process according to one or more of Claims 1 to 3, characterized in that one or more transition metal complex cation forming compounds or coordination complex compounds are used as co-catalyst, chosen from the group of strong, neutral Lewis acids, ionic compounds with Lewis acid cations or Broenstedt acid cations and non-coordinating anions.
5. A composition containing one or more transition metal compounds from groups 5-10 of the Periodic System according to IUPAC 1985, one or more radical-producers and optionally one or more co-catalysts.

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15 A<sub>3</sub> 3.

6. A composition according to Claim 5, characterized in that the transition metal is chosen from vanadium, chromium, manganese, iron, cobalt, nickel, ruthenium, rhodium and palladium.

5m

5 A4 7.

A composition according to one of more of Claims 5 to 6, characterized in that the radical-producer is a peroxide, a diazo compound or a mixture thereof.

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8. A composition according to one or more of Claims 5 to 7, characterized in that one or more compounds chosen from the group of strong, neutral Lewis acids, ionic compounds with Lewis acid cations or Broenstedt acid cations and non-coordinating anions are used as co-catalysts.

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9. A composition according to one or more of Claims 5 to 8, characterized in that the transition metal compound is chosen so that the transition metal compound, optionally in the presence of a co-catalyst, can reversibly form a complex with a radically growing polymer chain and non-polar monomers can be inserted into the bond formed in this way between transition metal and polymer chain.

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10. Use of the composition according to one or more of Claims 5 to 8 as a polymerization catalyst.

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11. Copolymers which have a statistical distribution on the molecular level and which can be prepared in a process according to one or more of Claims 1 to 4.

12. Use of copolymers according to Claim 11 to prepare molded items of all types, adhesives or additives.

Add New  
Claims  
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